

## ABSTRACT

Providing variable grades of service to a plurality of users in a delay domain or coherence multiplexing environment, a method combines non-synchronized, mixed rate channels over a single coherence multiplexed datalink. The power levels of each independent channel may be varied to optimize the performance of the multiplexed system and provide differing grades of service required by independent users and reduce cross-channel interference. Channels of lower data rates may be transmitted at a lower power level to further optimize the total power transmitted across an optical fiber, where the total power into the fiber is held constant. The present invention employs a control module configured to adjust the power levels of the independent channels based on the signal to noise ratio or bit error ratio, data rates required by independent users, the input power level allowed by a fiber, fiber cable loss, detector noise, and laser coherence length.